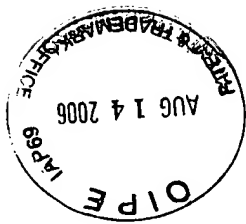
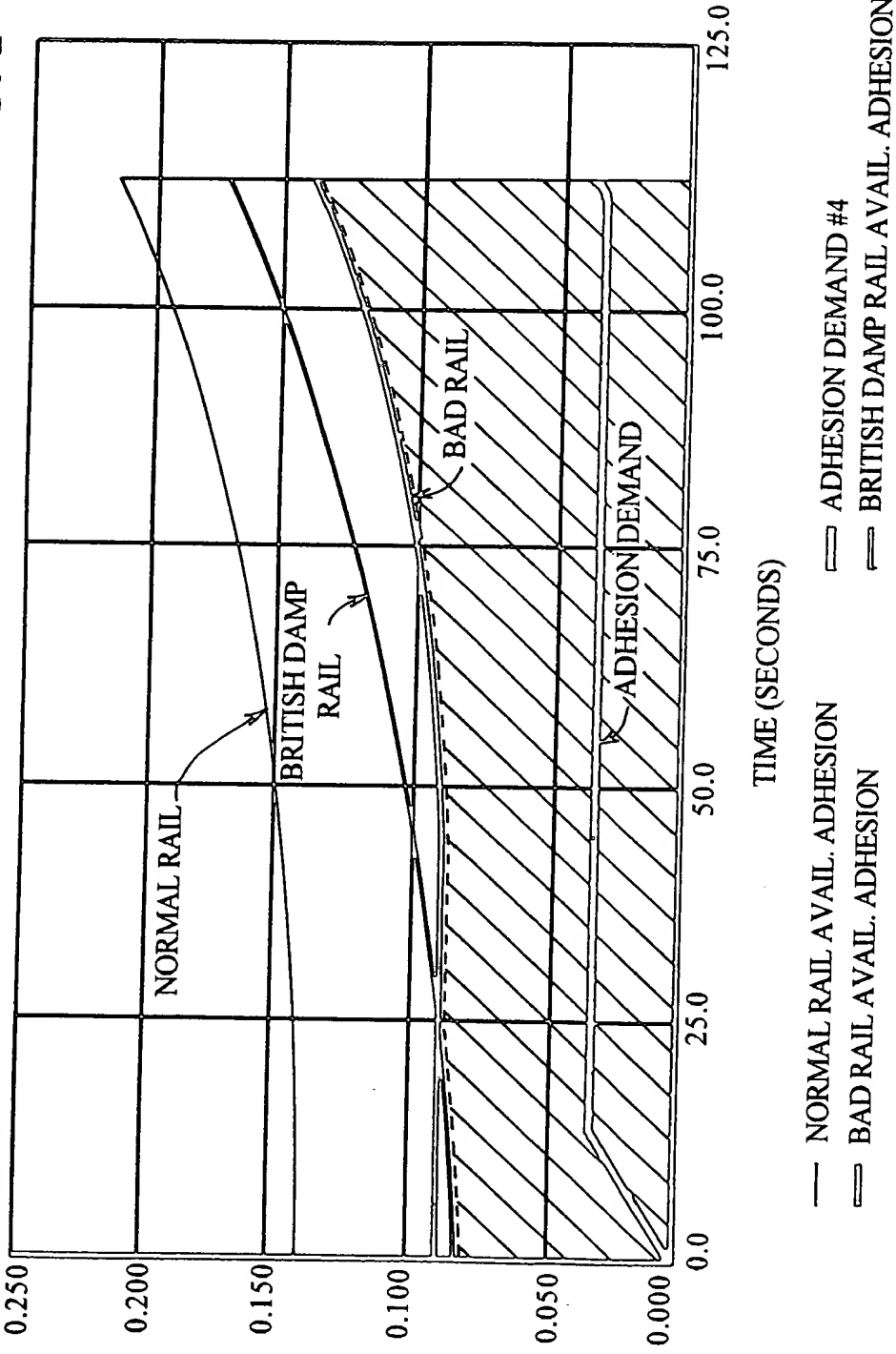
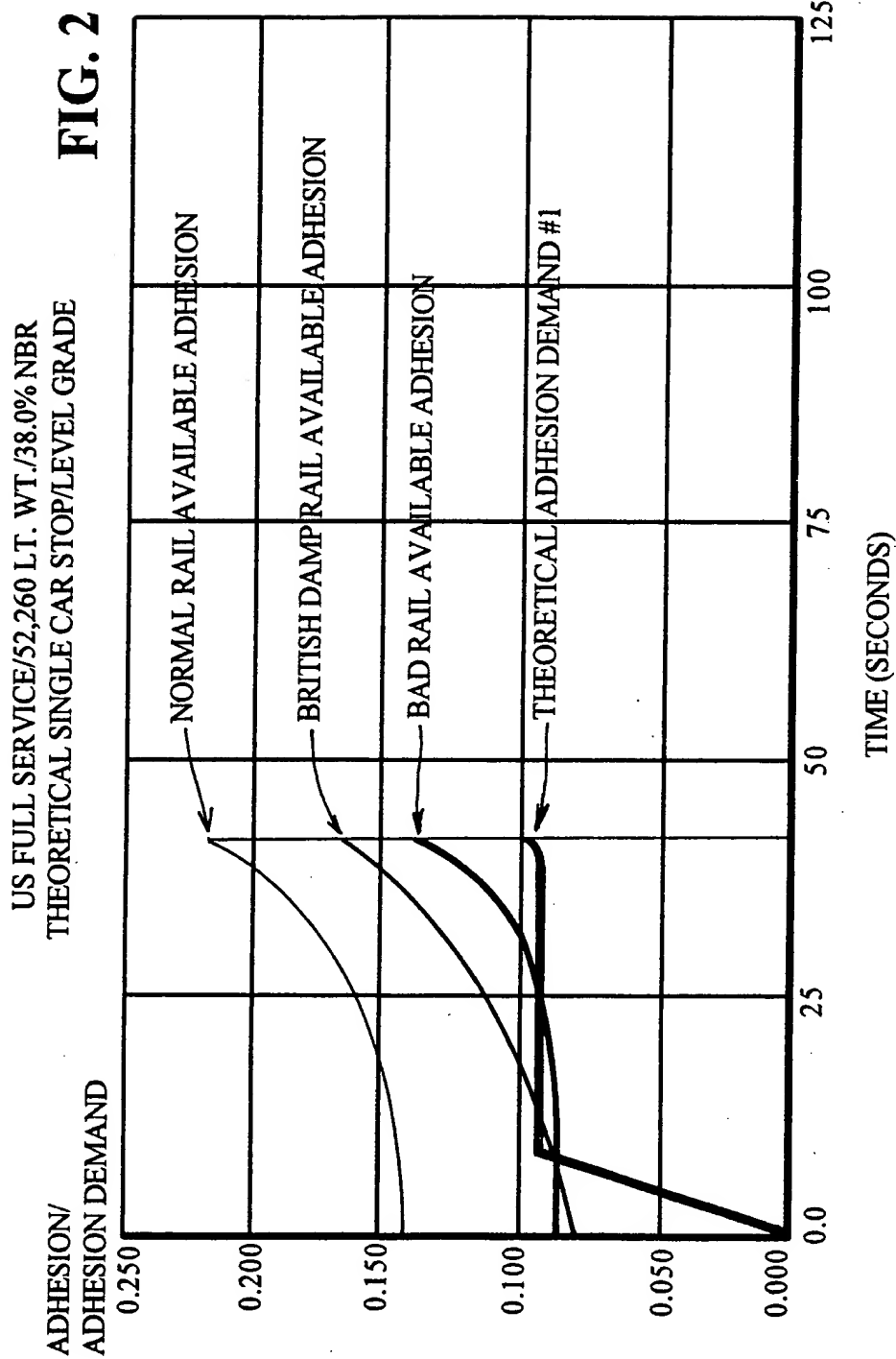
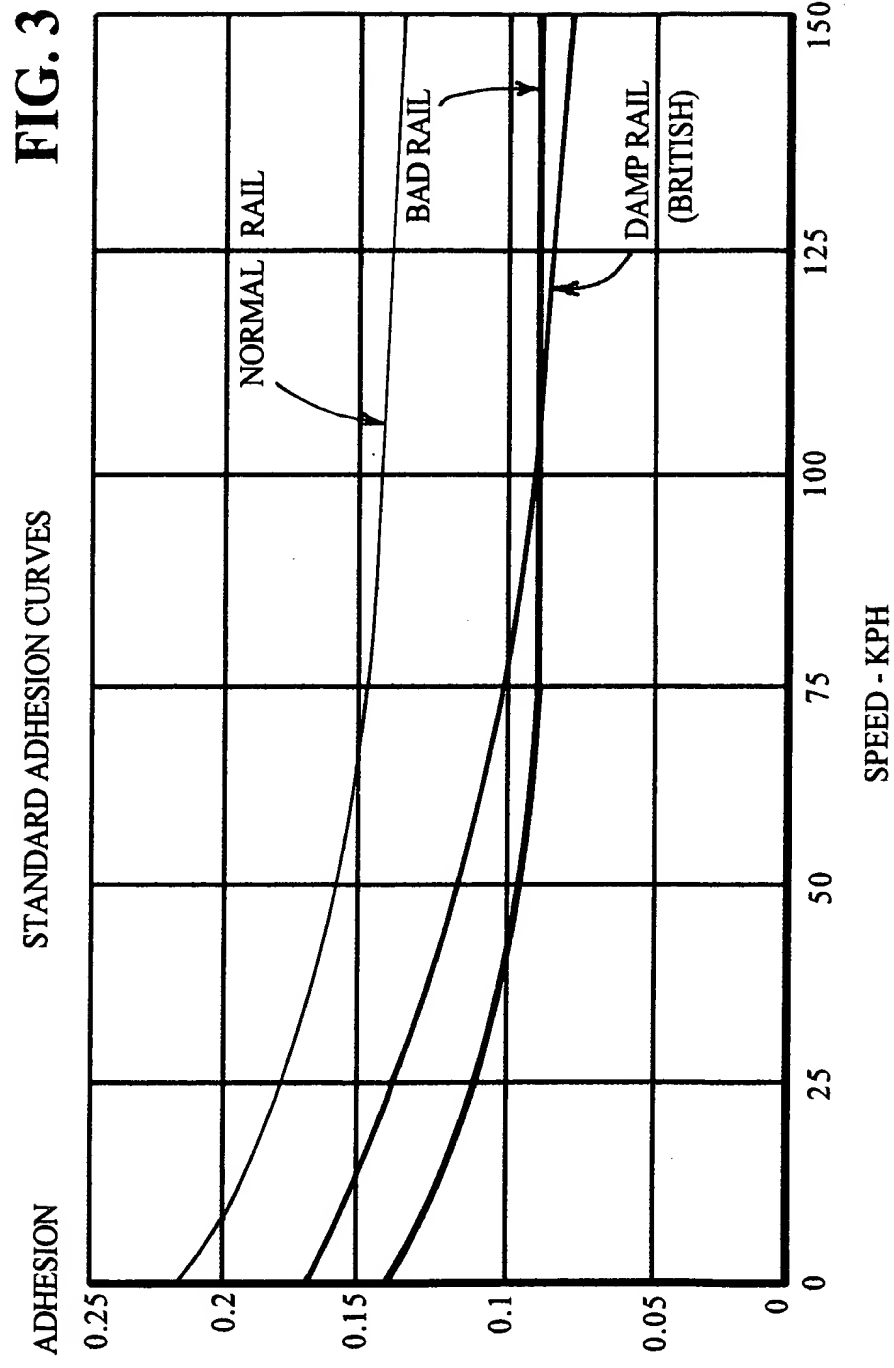


US FULL SERVICE/286K GRL/13.0% NBR
THEORETICAL SINGLE CAR STOP/LEVEL GRADE

FIG. 1







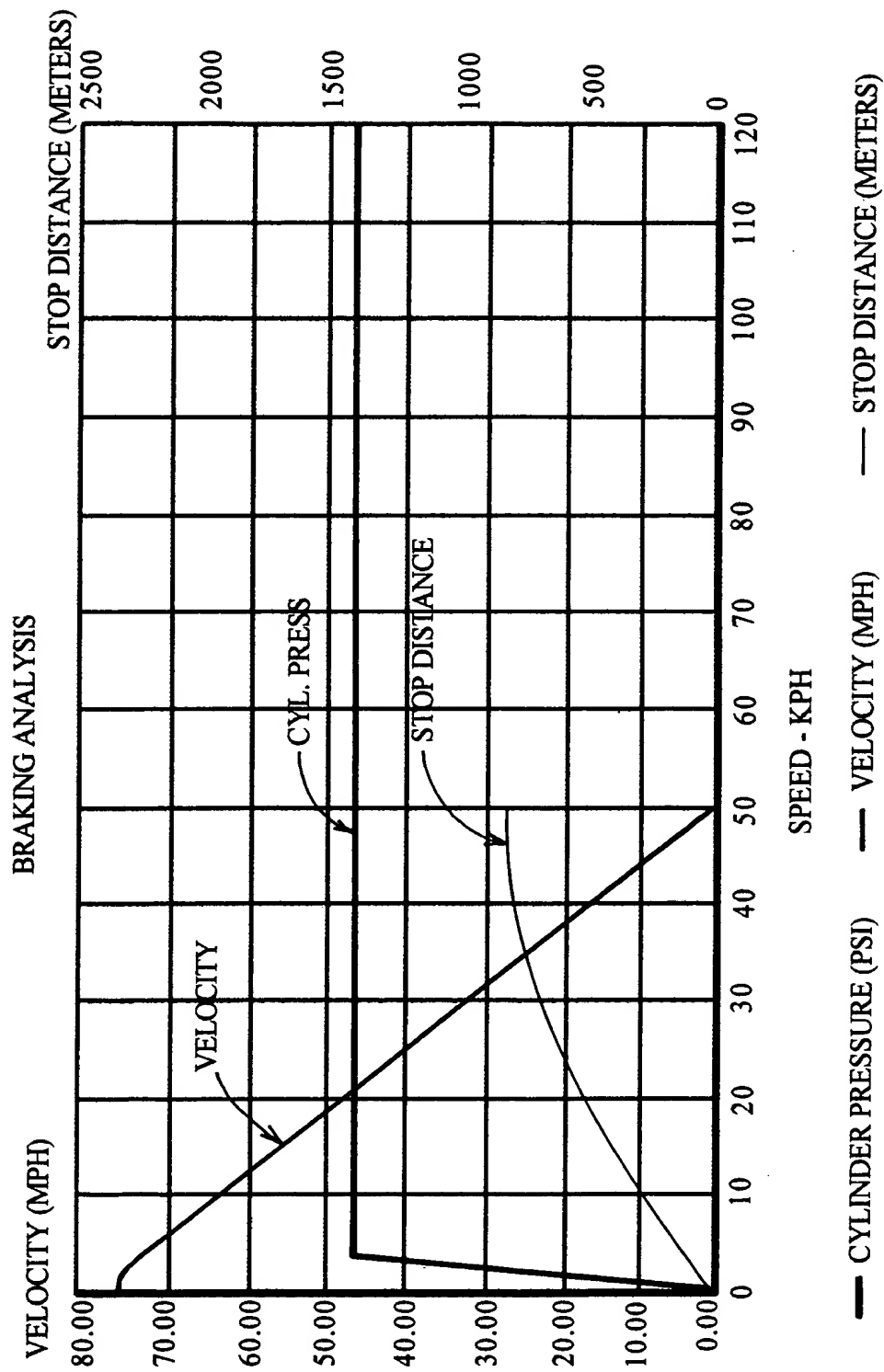


FIG. 4

TEST 14
58.8 MILE/HR.

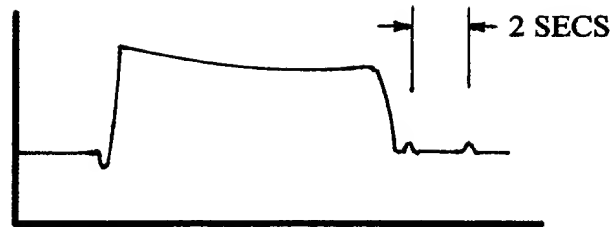


FIG. 5A

TEST 12
65.5 MILE/HR.

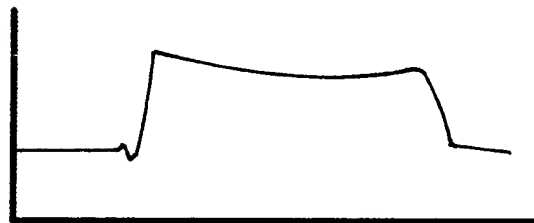
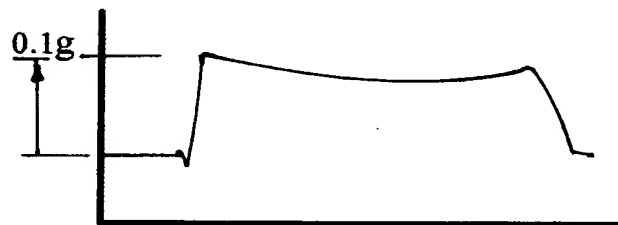


FIG. 5B

TEST 10
72.9 MILE/HR.



CHANGE IN DECELERATION
DUE TO BREAK SHOE FADE

DECELERATION →

FIG. 5C

CHART #1- US FULL SERV./52,260 LT. WT./38.0% NBR
THEORETICAL SINGLE CAR STOP/LEVEL GRADE
ADHESION/
ADHESION DEMAND

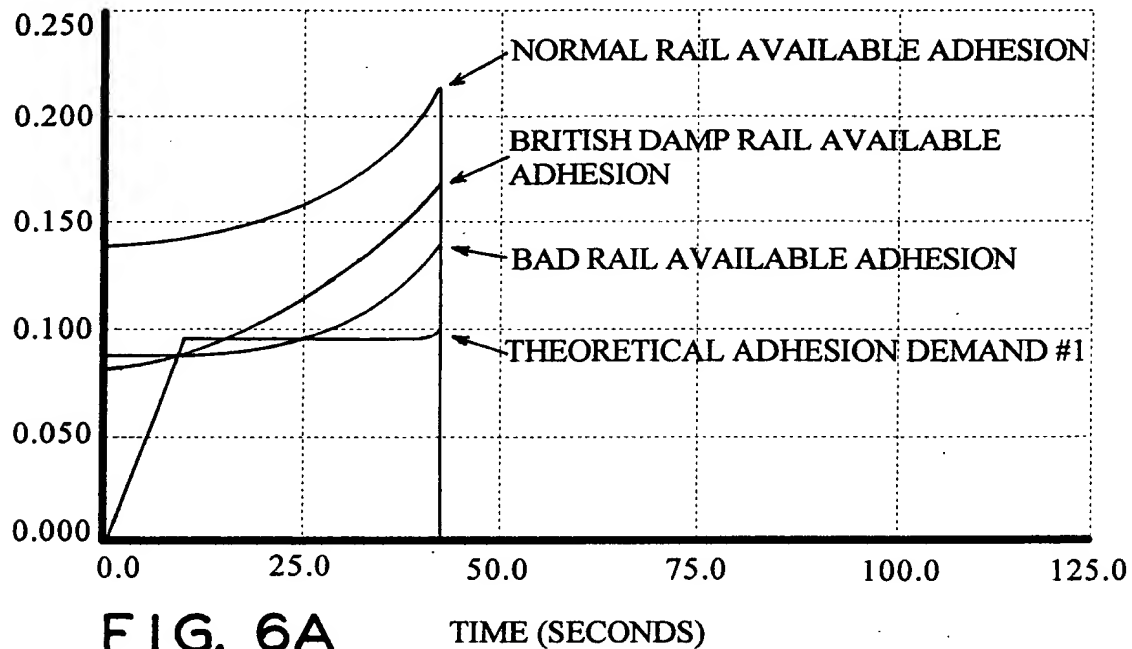
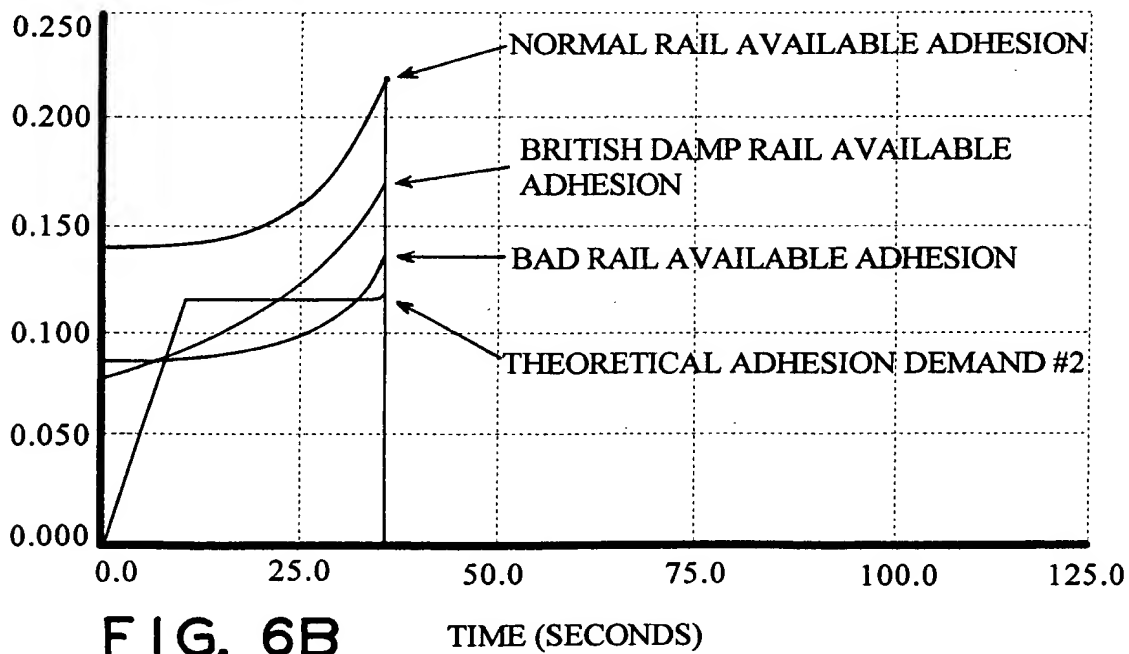


CHART #2 - US EMERGENCY/52,260 LT. WT./45.6% NBR
THEORETICAL SINGLE CAR STOP/LEVEL GRADE
ADHESION/
ADHESION DEMAND



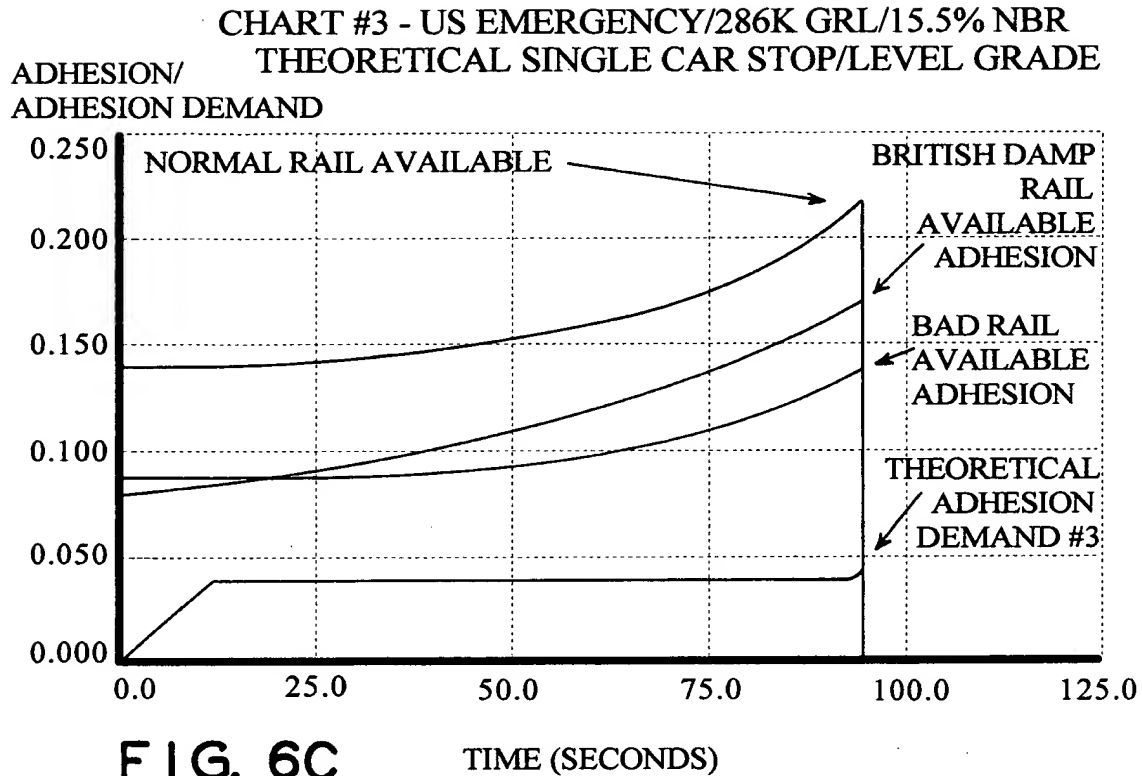


FIG. 6C

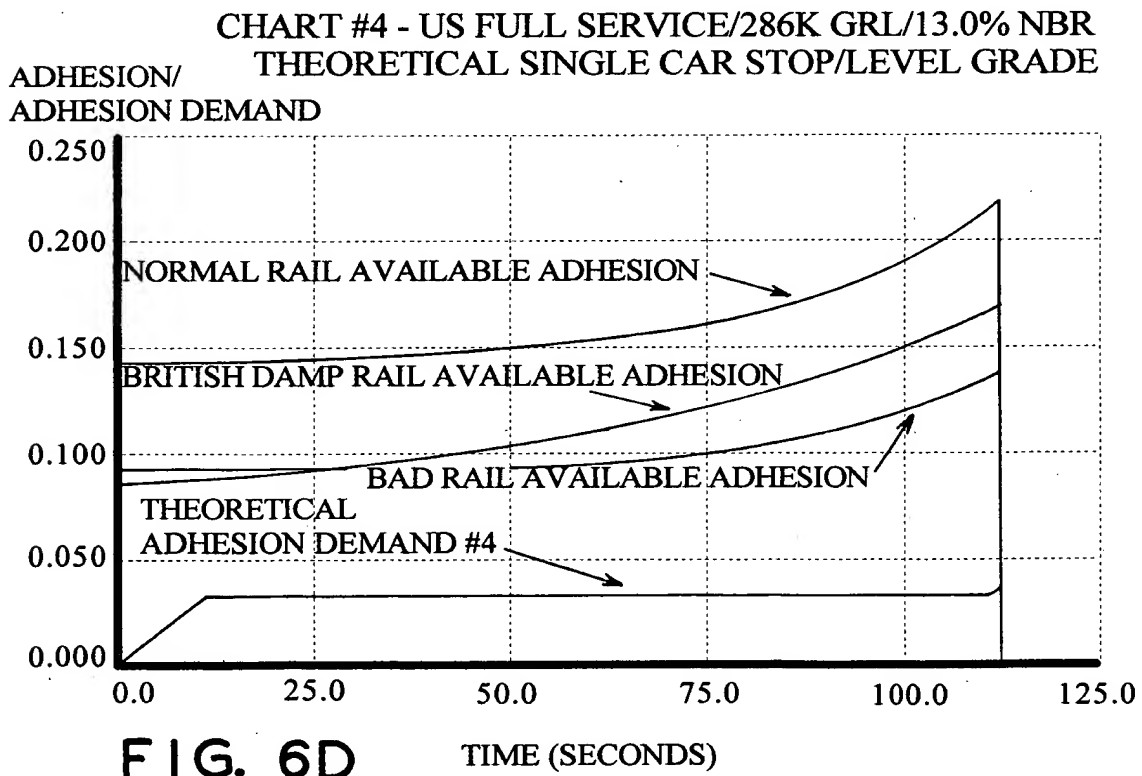


FIG. 6D

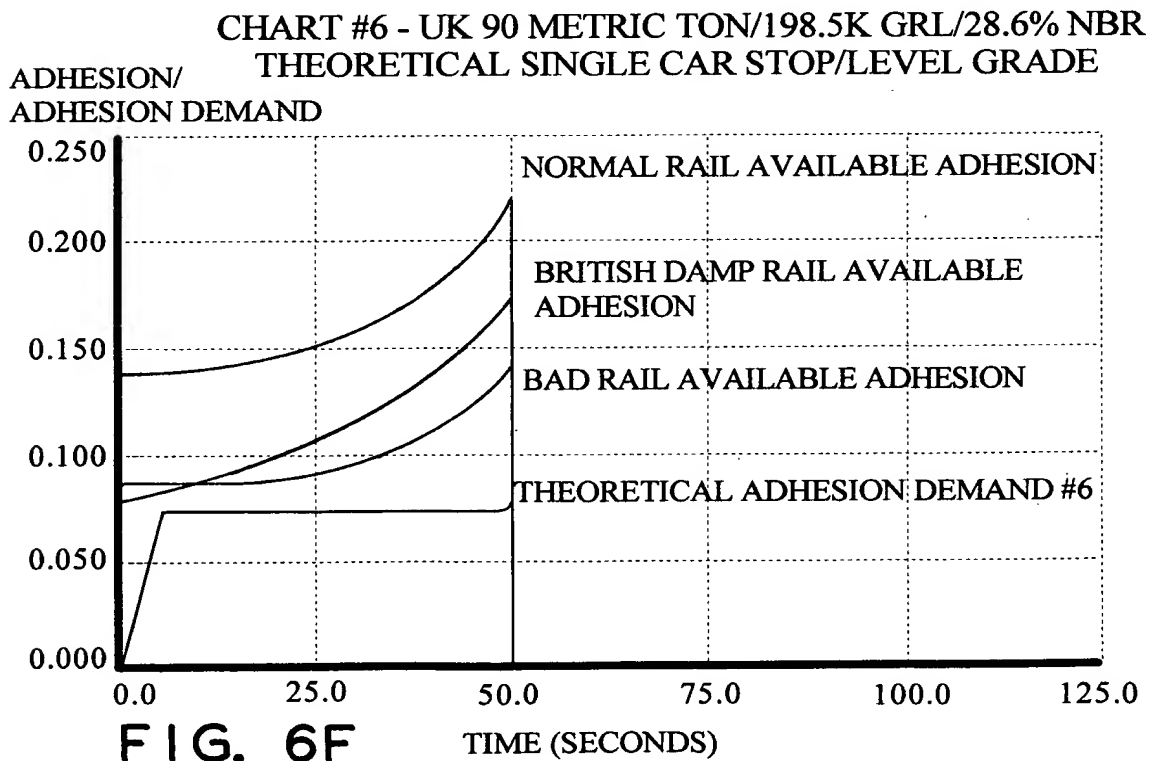
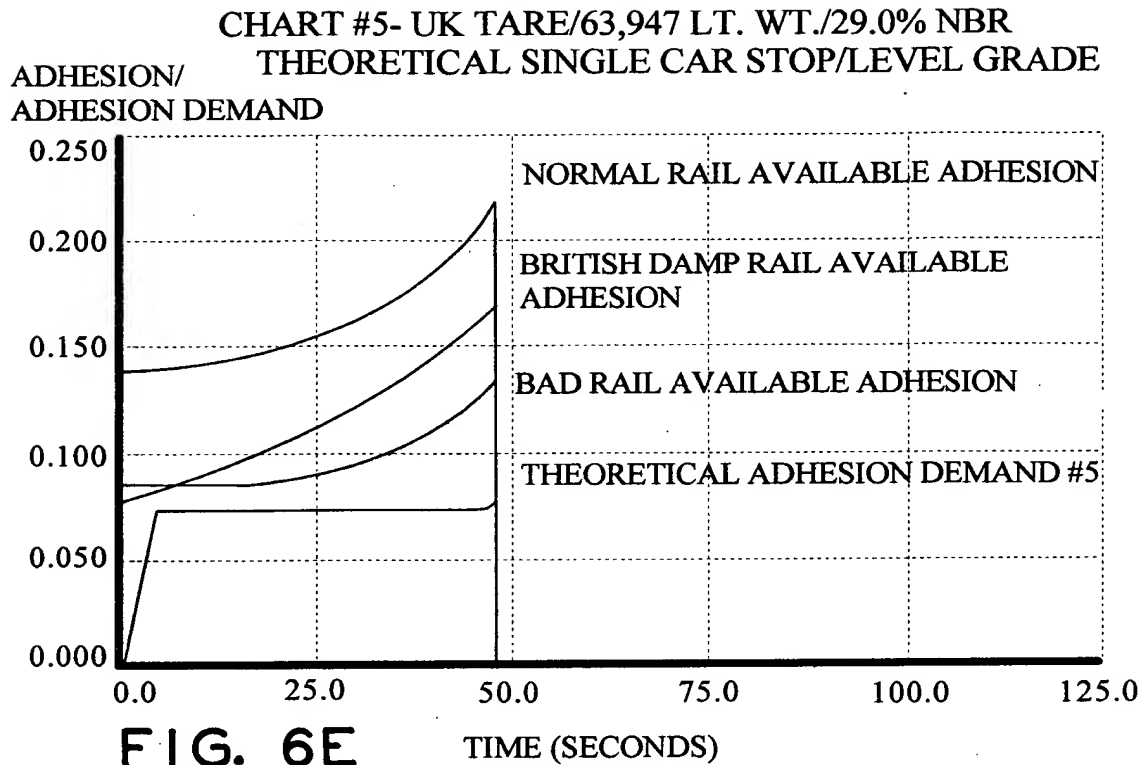


CHART #7- UK 102 METRIC TON/225K GRL 28.6% NBR
 ADHESION/ THEORETICAL SINGLE CAR STOP/LEVEL GRADE
 ADHESION DEMAND

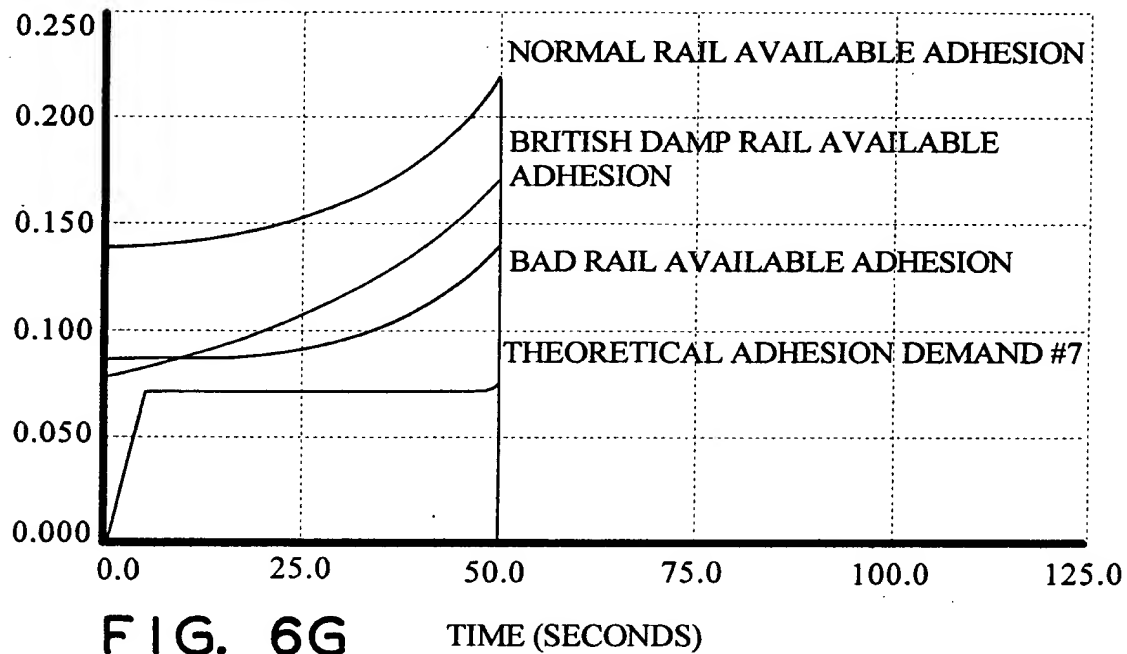


FIG. 6G

TIME (SECONDS)

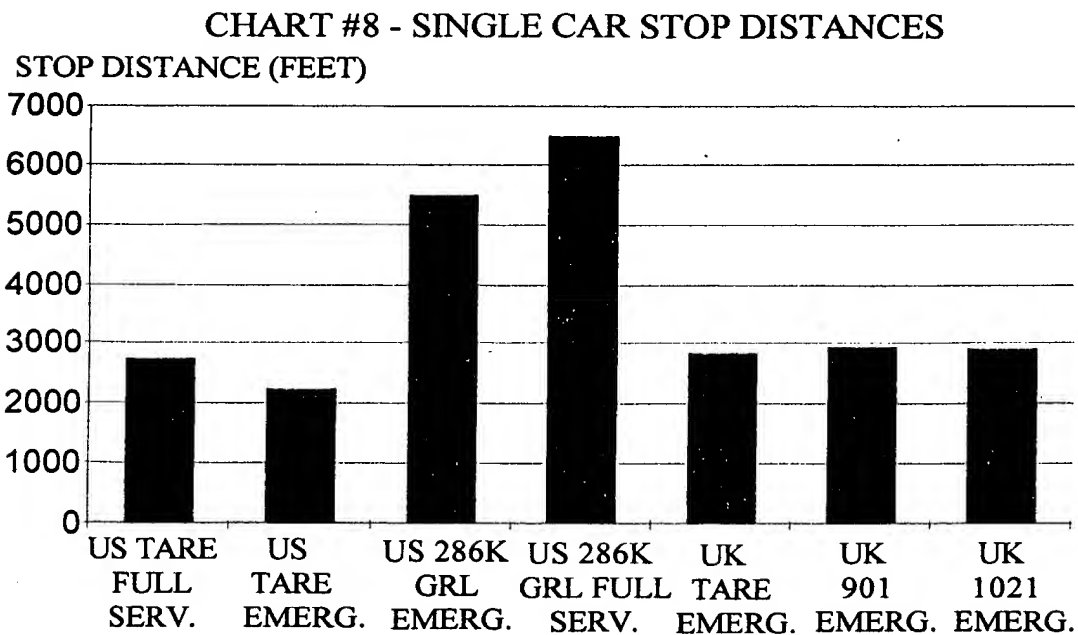


FIG. 6H